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the CAS Roles thesaurus (/RL field) in this file.

=> d stat que
L1          415 SEA FILE=REGISTRY XYLANASE?/CN
L2           11 SEA FILE=REGISTRY ENDOXYLANASE?/CN
L7         5380 SEA FILE=HCAPLUS L1 OR XYLANASE?
L8         3344 SEA FILE=HCAPLUS L2 OR ENDOXYLANASE?
L12         116 SEA FILE=HCAPLUS L7(5A)INHIBIT?
L14          32 SEA FILE=HCAPLUS L8(5A)INHIBIT?
L15         127 SEA FILE=HCAPLUS L12 OR L14
L16          46 SEA FILE=HCAPLUS L15 AND (CEREAL? OR WHEAT? OR FLOUR? OR RYE?
                OR TRITICALE? OR BARLEY? OR SORGHUM? OR OAT? OR CORN? OR
                MAIZE? OR RICE OR GRAIN?)


=> d ibib abs hitrn l16 1-45

L16  ANSWER 1 OF 46  HCAPLUS  COPYRIGHT 2002 ACS
ACCESSION NUMBER:        2002:380474  HCAPLUS
TITLE:                   Functional identification of the cDNA coding for a
                         wheat endo-1,4-.beta.-D-xylanase
                         inhibitor
AUTHOR(S):               Elliott, Giles O.; Hughes, Richard K.; Juge, Nathalie;
                         Kroon, Paul A.; Williamson, Gary
CORPORATE SOURCE:        Institute of Food Research, Norwich Research Park,
                         Norwich, NR4 7UA, UK
SOURCE:                  FEBS Letters (2002), 519(1-3), 66-70
                         CODEN: FEBLAL; ISSN: 0014-5793
```

PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Using expressed sequence tag data, we obtained a full-length cDNA encoding a **wheat** protein **inhibitor** of **xylanases** (XIP-I). The 822 bp open reading frame encoded a protein of 274 amino acids with a mol. mass of 30.2 kDa, in excellent agreement with the native protein. Expression in Escherichia coli confirmed that the cDNA encoded a functional endo-1,4-.beta.-D-**xylanase inhibitor**. Its deduced amino acid sequence exhibited highest similarity to sequences classified as class III chitinases, but the inhibitor did not exhibit chitinase activity. This is the first full-length cDNA sequence that encodes a novel class of protein which inhibits the activity of endo-1,4-.beta.-D-xylanases.
REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 2 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2002:38189 HCAPLUS
DOCUMENT NUMBER: 136:368849
TITLE: Endoxylanases in durum **wheat** semolina processing: Solubilization, action of endogenous inhibitors and effects on rheological properties
AUTHOR(S): Ingelbrecht, J. A.; Verwimp, T.; Delcour, J. A.
CORPORATE SOURCE: Katholieke Universiteit Leuven, Laboratory of Food Chemistry, Heverlee, B-3001, Belg.
SOURCE: Colloques - Institut National de la Recherche Agronomique (2001), 99, 119-123
CODEN: COLIEZ; ISSN: 0293-1915
PUBLISHER: Institut National de la Recherche Agronomique
DOCUMENT TYPE: Journal
LANGUAGE: English
AB It is shown that endoxylanase activities affect the rheol. properties of pasta doughs and that this effect is modified by the presence of endogenous **endoxylanase inhibitors**. These modifications are explained by a change in the ratio between the water sol. and the water insol. arabinoxylan fractions.
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 3 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:935766 HCAPLUS
DOCUMENT NUMBER: 136:66208
TITLE: Plant **endoxylanase inhibitors** and cDNAs, and methods for inhibitor preparation with recombinant cells and purification and use
INVENTOR(S): Delcour, Jan; Debyser, Winok; Gebruers, Kurt; Goesaert, Hans; Fierens, Katleen; Robben, Johan; Van Campenhout, Steven
PATENT ASSIGNEE(S): K.U. Leuven Research and Development, Belg.
SOURCE: PCT Int. Appl., 128 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001098474	A1	20011227	WO 2001-BE106	20010621

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.:		
GB 2000-15296	A	20000622
GB 2001-2018	A	20010125
GB 2001-2194	A	20010126
GB 2001-6564	A	20010316
GB 2001-12328	A	20010521

AB The present invention concerns a method for the sepn. and/or isolation of inhibitors of cellulolytic, xylanolytic and/or beta-glucanolytic enzymes, inhibitors obtainable by said method, and process for obtaining micro-organism, plant or plant material wherein the activity of the inhibitor according to the invention is increased or reduced and to the use of the inhibitor, using the cited micro-organism, plant or plant material and/or the use of **endoxylanases** selected or modified using these **inhibitors** in a variety of process and applications. Thus, two **endoxylanase inhibitors** from **wheat** , TAXI and TAXII, and one from **barley**, HvXI, were purified and partially characterized. Both TAXI and TAXII exhibit noncompetitive **inhibition** of B. subtilis **endoxylanase**, but TAXI shows competitive **inhibition** of A. niger **endoxylanase** (while TAXII shows little or no inhibition). The purifn. of TAXI and TAXII involved cation exchange and gel filtration chromatog. Addnl., **endoxylanase inhibitors** were isolated from com. **wheat flour**, **rye flour**, and **barley** whole meal using an alternative approach, i.e., affinity chromatog. with immobilized endoxylanase. Immobilized TAXI-like **endoxylanase inhibitors** were used to isolate **endoxylanases** from com. available enzyme prepns. The cDNA sequences encoding these **endoxylanase inhibitors** are provided and expression of TAXI cDNA in E. coli is described.

IT **383450-64-4P**, **Xylanase inhibitor** TAX I (**wheat** isoform) **383450-65-5P**, **Xylanase inhibitor** TAX I (**wheat** isoform) **383450-66-6P**, **Xylanase inhibitor** TAX I (**wheat**) **383450-68-8P 383450-69-9P 383450-70-2P 383450-76-8P 383450-77-9P 383450-78-0P 383450-79-1P 383450-82-6P 383450-83-7P 383450-85-9P 383450-87-1P 383450-90-6P 383450-92-8P**
RL: AGR (Agricultural use); BPN (Biosynthetic preparation); FFD (Food or feed use); PRP (Properties); THU (Therapeutic use); BIOL (Biological

study); PREP (Preparation); USES (Uses)
(amino acid sequence; plant **endoxylanase inhibitors** and cDNAs, and methods for inhibitor prepn. with recombinant cells and purifn. and use)

IT **37278-89-0P, Endoxylanase**
RL: AGR (Agricultural use); BPN (Biosynthetic preparation); FFD (Food or feed use); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(**inhibitors**; plant **endoxylanase inhibitors** and cDNAs, and methods for inhibitor prepn. with recombinant cells and purifn. and use)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 4 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:676913 HCAPLUS
DOCUMENT NUMBER: 135:238613
TITLE: Mutant **xylanase** with altered sensitivity to **xylanase inhibitors** and applications to processing plant materials
INVENTOR(S): Sibbesen, Ole; Sorensen, Jens Frisbaek
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 69 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001066711	A1	20010913	WO 2001-IB426	20010308

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: GB 2000-5585 A 20000308
GB 2000-15751 A 20000627

AB The present invention relates to mutant endo-.beta.-1,4-xylanase (EC 3.2.1.8) having an altered sensitivity to **xylanase inhibitors**. The present invention also relates to the use of these mutant enzymes in processing plant materials, such as: baking, processing **cereals**, starch prodn., wood processing, enhancing the bleaching of wood pulp. Mutant **xylanases** with altered sensitivity to **xylanase inhibitors** from Bacillus subtilis are claimed.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 5 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:545426 HCAPLUS
DOCUMENT NUMBER: 135:91888
TITLE: Process of forming a refrigerated dough
INVENTOR(S): Poulsen, Charlotte Horsmans; Sorensen, Jens Frisbaek
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001052657	A1	20010726	WO 2001-IB168	20010117

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: GB 2000-1136 A 20000118
AB A process of forming a refrigerated dough is described. The process comprises admixing **cereal flour** and water with a protein that can reduce or prevent the enzymic (xylanase) degrdn. of arabinoxylan present in the **cereal flour**.
IT **37278-89-0P, Xylanase**
RL: FFD (Food or feed use); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation); USES (Uses)
(**inhibitor**; process of forming a refrigerated arabinoxylan-contg. dough)
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 6 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:542936 HCAPLUS
DOCUMENT NUMBER: 135:241213
TITLE: Purification and partial characterization of an **endoxylanase inhibitor** from **barley**
AUTHOR(S): Goesaert, H.; Debyser, W.; Gebruers, K.; Proost, P.; Van Damme, J.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: Cereal Chemistry (2001), 78(4), 453-457
CODEN: CECHAF; ISSN: 0009-0352
PUBLISHER: American Association of Cereal Chemists
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Hordeum vulgare L. **xylanase inhibitor** (HVXI), an

endoxylanase inhibitor with a protein structure, was purified to homogeneity from **barley** (Hordeum vulgare L.). HVXI is a nonglycosylated monomeric protein, with a mol. wt. of .apprxeq.40,000 and a pI .gtoreq. 9.3. Although it **inhibits** different **endoxylanases** to a varying degree, the activities of an .alpha.-L-arabinofuranosidase and a .beta.-D-xylosidase were not inhibited. Apparently, HVXI occurs in two mol. forms. These characteristics and the N-terminal sequences of the composing polypeptides show that HVXI is homologous with Triticum aestivum L. **xylanase inhibitor** I, an **endoxylanase inhibitor** from **wheat flour**.

IT **37278-89-0P, Endoxylanase**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(**inhibitor**; purifn. and partial characterization of **endoxylanase inhibitor** from **barley**)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 7 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:435239 HCAPLUS
DOCUMENT NUMBER: 135:30734
TITLE: Characterization and sequencing of a thermostable xylanase from Talaromyces emersonii and use of the xylanase in food supplement
INVENTOR(S): Gravesen, Troels Norgaard; Derkx, Patrick Maria Franciscus
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 78 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001042433	A2	20010614	WO 2000-IB1941	20001206
WO 2001042433	A3	20011227		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: GB 1999-28968 A 19991207

AB A thermostable xylanase from Talaromyces emersonii capable of modifying a xylan polymer in a food and/or feed supplement is disclosed. Genomic, cDNA and encoded amino acid sequences of the T. emersonii xylanase are provided. The activity of the xylanase is substantially independent of

any level of a **wheat xylanase inhibitor** that may be present in the food and/or feed supplement. The inclusion of the the T. emersonii xylanase in the **cereal**-based food or feed improves the digestibility.

L16 ANSWER 8 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:287304 HCAPLUS
DOCUMENT NUMBER: 135:317671
TITLE: Endoxylanases in durum **wheat** semolina processing: solubilization, action of endogenous inhibitors and effects on rheological properties
AUTHOR(S): Ingelbrecht, J. A.; Verwimp, T.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: VTT Symposium (2000), 207, 287-292
CODEN: VTTSE9; ISSN: 0357-9387
PUBLISHER: Valtion Teknillinen Tutkimuskeskus
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A study was conducted to elucidate the effect of different dosages of a no. of endoxylanases on spaghetti dough prepd. in the farinograph. Endoxylanases of various origin were tested. The changes in water-extractable arabinoxylan (WE-AX) to water-unextractable arabinoxylan (WU-AX) ratio were monitored, as were the gel permeation profiles of the purified AX. At the same time, it was studied to what extent the differences in endoxylanase action could be related to the presence of **endoxylanase inhibitors** in durum **wheat**. Results indicated that endoxylanases drastically affected the rheol. properties of durum semolina pasta doughs prepd. in the farinograph. By omitting a certain amt. of water and adding a certain level of endoxylanase, the decrease of the maximal consistency was restored. Finally, maximal consistency depended on the level and/or the MW of the WE-AX. The activity of the endoxylanases was influenced to different extents by durum **wheat** endogenous **endoxylanase inhibitors**.
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 9 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:287270 HCAPLUS
DOCUMENT NUMBER: 135:151771
TITLE: **Xylanase inhibitors** from **cereals**. Implications for baking, brewing, and plant technology
AUTHOR(S): McLauchlan, W. R.; Flatman, R. H.; Sancho, A. I.; Kakuta, J.; Faulds, C. B.; Elliot, G. O.; Kroon, P. A.; Furniss, C. S. M.; Juge, N.; Ravestein, P.; Williamson, G.
CORPORATE SOURCE: Division of Diet, Health and Consumer Sciences, Institute of Food Research, Norwich Research Park, Norwich, NR4 7UA, UK
SOURCE: VTT Symposium (2000), 207, 55-61
CODEN: VTTSE9; ISSN: 0357-9387
PUBLISHER: Valtion Teknillinen Tutkimuskeskus

DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review with 19 refs,. including the authors' own work, is given on purifn. and characterization of **xylanase inhibitors** from **wheat flour** and other **cereals**. The implications for food and agriculture industry are discussed of the presence of these inhibitors in **cereal flour**, with particular ref. to baking, brewing, and plant biotechnol.
IT **37278-89-0P, xylanase**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(**inhibitor; xylanase inhibitors** of **cereals** implications for baking, brewing, and plant technol.)
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 10 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:287269 HCAPLUS
DOCUMENT NUMBER: 135:317554
TITLE: TAXI, a new class of enzyme inhibitors
AUTHOR(S): Debyser, W.; Peumans, W. J.; Goesaert, H.; Gebruers, K.; Van Damme, E. J. M.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: VTT Symposium (2000), 207, 47-54
CODEN: VTTSE9; ISSN: 0357-9387
PUBLISHER: Valtion Teknillinen Tutkimuskeskus
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB To demonstrate that **cereals** contain besides .alpha.-amylase and protease **inhibiting** proteins of **endoxylanases**, the Triticum aestivum **xylanase-inhibitor** (TAXI) was isolated and characterized. The discovery of TAXI opens an entirely new area in research since it demonstrates the existence of a group of proteins which are equally relevant for the improvement of plant disease resistance, as well as for nutraceutical or pharmaceutical applications. All this and more was reviewed with 27 refs.
IT **37278-89-0, Xylanase**
RL: PRP (Properties)
(-**inhibitor**; TAXI, a new class of enzyme inhibitors)
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 11 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:287268 HCAPLUS
DOCUMENT NUMBER: 135:317553
TITLE: Endogenous inhibitors of the endoproteinases and other enzymes of **barley**
AUTHOR(S): Jones, Berne L.; Marinac, Laurie A.
CORPORATE SOURCE: Cereal Crops Research Unit, USDA/Agricultural Research Service, Madison, WI, 53705, USA
SOURCE: VTT Symposium (2000), 207, 39-46
CODEN: VTTSE9; ISSN: 0357-9387

PUBLISHER: Valtion Teknillinen Tutkimuskeskus
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review with 18 refs. Topics discussed include the inhibitors of carbohydrate-degrading enzymes such as the .alpha.-amylase inhibitor, the limit dextrinase **inhibitor**, and the **xylanase inhibitor**; the identification of proteinase **inhibitors**; the demonstration of inhibitors in **barley** and malt; the sepn. of **barley** and malt inhibitors by ion exchange chromatog.; the purifn. and identification of two endoproteinase inhibitors; the observation that the inhibitors affect mainly the malt cysteine proteinases; the suggestion that inhibitors are complexed with proteinases in exts.; attempts to dissoc. the enzyme-inhibitor complex; and the finding that adding endogenous endoproteinase inhibitors to mashes lowers wort sol. protein levels.
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 12 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:81139 HCAPLUS
DOCUMENT NUMBER: 134:262725
TITLE: Triticum aestivum L. **endoxylanase inhibitor** (TAXI) consists of two **inhibitors**, TAXI I and TAXI II, with different specificities
AUTHOR(S): Gebruers, Kurt; Debyser, Winok; Goesaert, Hans; Proost, Paul; Van Damme, Jozef; Delcour, Jan A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: Biochemical Journal (2001), 353(2), 239-244
CODEN: BIJOAK; ISSN: 0264-6021
PUBLISHER: Portland Press Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The Triticum aestivum L. **endoxylanase inhibitor** (TAXI) discovered by Debyser and Delcour and Debyser, Derdelinckx and Delcour seems to be a mixt. of two different **endoxylanase inhibitors**, called TAXI I and TAXI II. By using Aspergillus niger as well as Bacillus subtilis **endoxylanases** for assaying **inhibition** activity, both **inhibitors** could be purified to homogeneity from **wheat** (Triticum aestivum L., var. Soissons). TAXI I and TAXI II have similar mol. structures. They both have a mol. mass of approx. 40.0 kDa, are not glycosylated and occur in two mol. forms, i.e. a non-proteolytically processed one and a proteolytically processed one. However, the pI of TAXI II (at least 9.3) is higher than that of TAXI I (8.8). TAXI I and TAXI II clearly show different **inhibition** activities towards different **endoxylanases**. The N-terminal amino acid sequences of both inhibitors show a high degree of identity, which might indicate that there is an evolutionary relationship between them.
IT **37278-89-0, Endoxylanase**
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(**inhibitor**; triticum aestivum L. **endoxylanase**

inhibitor (TAXI) consists of two **inhibitors**, TAXI I and TAXI II, with different specificities)
REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 13 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:867247 HCAPLUS
DOCUMENT NUMBER: 134:251506
TITLE: Inhibition of ruminant feed enzyme polysaccharidase activities by extracts from silages
AUTHOR(S): Nsereko, V. L.; Morgavi, D. P.; Beauchemin, K. A.; Rode, L. M.
CORPORATE SOURCE: Agriculture and Agri-Food Canada Research Centre, Lethbridge, AB, T1J 4B1, Can.
SOURCE: Canadian Journal of Animal Science (2000), 80(3), 523-526
CODEN: CNJNAT; ISSN: 0008-3984
PUBLISHER: Agricultural Institute of Canada
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Exts. from 14 **barley** silages **inhibited** endo-1,4-.beta.-**xylanase** and .alpha.-amylase activities of a ruminant feed enzyme additive from Trichoderma longibrachiatum by 23 to 50% but had little effect on cellulase activity. The inhibitory factor(s) were < 10 kDa in size and were stable to autoclaving. These observations may explain why feed enzymes are generally less effective when applied to silages than when applied to dry feeds.
IT **9025-57-4**, Endo-1,4-.beta.-**xylanase**
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(**inhibition** of ruminant feed enzyme polysaccharidase activities by exts. from silages)
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 14 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:618235 HCAPLUS
DOCUMENT NUMBER: 133:234293
TITLE: Production and characterization of thermostable xylanase and pectinase from Streptomyces sp. QG-11-3
AUTHOR(S): Beg, Q. K.; Bhushan, B.; Kapoor, M.; Hoondal, G. S.
CORPORATE SOURCE: Department of Microbiology, Panjab University, Chandigarh, 160 014, India
SOURCE: Journal of Industrial Microbiology & Biotechnology (2000), 24(6), 396-402
CODEN: JIMBFL; ISSN: 1367-5435
PUBLISHER: Nature Publishing Group
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Streptomyces sp. QG-11-3, which produces a cellulase-free thermostable xylanase (96 IU/mL) and a pectinase (46 IU/mL), was isolated on Horikoshi medium supplemented with 1% **wheat** bran. C sources that favored xylanase prodn. were **rice** bran (82 IU/mL) and birch-wood xylan (81 IU/mL); pectinase prodn. was also stimulated by pectin and cotton seed

cake (34 IU/mL each). Partially purified xylanase and pectinase were optimally active at 60.degree.. Both enzymes were 100% stable at 50.degree. for >24 h. The half-lives of xylanase and pectinase at 70, 75 and 80.degree. were 90, 75, and 9 min, and 90, 53, and 7 min, resp. The optimum pH values for xylanase and pectinase were 8.6 and 3.0, resp., at 60.degree.. Xylanase and pectinase were stable over the broad pH ranges of 5.4-9.4 and 2.0-9.0, resp., retaining >85% of their activities. Ca2+ stimulated the activity of both enzymes up to 7%, whereas Cd2+, Co2+, Cr3+, iodoacetate, and iodoacetamide **inhibited xylanase** up to 35% and pectinase up to 63%; at 1 mM, Hg2+ inhibited both enzymes completely.

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 15 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:457204 HCAPLUS
DOCUMENT NUMBER: 133:88573
TITLE: **Xylanases** and **wheat flour** **xylanase inhibitors** and their effects on dough stickiness
INVENTOR(S): Sibbesen, Ole; Sorensen, Jens Frisbaek
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 112 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000039289	A2	20000706	WO 1999-IB2071	19991217
WO 2000039289	A3	20010412		
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
BR 9916507	A	20011002	BR 1999-16507	19991217
EP 1141254	A1	20011010	EP 1999-959641	19991217
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
GB 2362386	A1	20011121	GB 2001-16552	19991217
FR 2788781	A1	20000728	FR 1999-16362	19991223

PRIORITY APPLN. INFO.:
GB 1998-28599 A 19981223
GB 1999-7805 A 19990406
GB 1999-8645 A 19990415
WO 1999-IB2071 W 19991217

AB The present invention discloses an endo-.beta.-1,4-**xylanase** **inhibitor** as well as **xylanases** and their interactions

and role in the stickiness of dough. The endogenous endo-.beta.-1,4-**xylanase inhibitor** from **wheat flour** was isolated and characterized. The **inhibitor** privides means for selecting **xylanases** which are not detrimentally affected by endo-.beta.-1,4-**xylanase inhibitors**. Bacterial xylanases and mutants are disclosed that provide dough exhibiting favorable vol. and acceptable stickiness when compared to doughs comprising fungal xylanases. In addn., the presence of glucanase enzymes in certain amts. are shown to have a detrimental effect on the xylanases.

L16 ANSWER 16 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:323549 HCAPLUS
DOCUMENT NUMBER: 133:73207
TITLE: Endoxylanases in Durum **Wheat** Semolina Processing: Solubilization of Arabinoxylans, Action of Endogenous Inhibitors, and Effects on Rheological Properties
AUTHOR(S): Ingelbrecht, J. A.; Verwimp, T.; Delcour, J. A.
CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.
SOURCE: Journal of Agricultural and Food Chemistry (2000), 48(6), 2017-2022
CODEN: JAFCAU; ISSN: 0021-8561
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Endoxylanases seriously affect the rheol. properties of durum **wheat** (Triticum durum Desf.) semolina spaghetti doughs prepd. with, and as evaluated, by the farinograph. Under the exptl. conditions, control doughs (34.9% moisture content) made from two semolinas (semA and semB) yielded a maximal consistency of 525 and 517 farinograph units (FU), with, resp., 19.4 and 16.4% of the total level of arabinoxylans (TOT-AX) being water-extractable (WE-AX). When 75.4 Somogyi units/50 g of semolina of the endoxylanases from Trichoderma viride (XTV), rumen microorganisms (XRM), Bacillus subtilis (XBS), and Aspergillus niger (XAN) were used, the maximal consistencies at 34.9% moisture decreased for semA to 467, 436, 448, and 417 FU, resp. This was accompanied by increased WE-AX contents of 60.8, 71.2, 70.7, and 73.0%, resp. Similar results were obsd. for semB. By reducing the total water content of doughs, it was possible to recover the maximal consistency of the original doughs. Both the decrease in maximal consistency and the amt. of water to be omitted were significantly related to the decrease in mol. wt. (MW) of the WE-AX and the percentage of WE-AX solubilized as a result of the enzymic action. At the same time, it was clear that endogenous **endoxylanase inhibitors** were present in the durum **wheat** semolinas and that they **inhibited** the **endoxylanases** used to different degrees. Part of the differences in effects between the different endoxylanases (decrease in maximal consistency, amt. of AX solubilized, MWs of the WE-AX, and amt. of water that could be omitted) could be ascribed to the differences in **inhibition** of the **endoxylanases** by endogenous **inhibitors**.
REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 17 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:223101 HCAPLUS
DOCUMENT NUMBER: 132:292782
TITLE: Production of Aspergillus terreus xylanase in solid-state cultures: application of the Plackett-Burman experimental design to evaluate nutritional requirements
AUTHOR(S): Ghanem, Nevine B.; Yusef, Hoda H.; Mahrouse, Heba K.
CORPORATE SOURCE: Botany Department, Faculty of Science, Alexandria University, Alexandria, Egypt
SOURCE: Bioresource Technology (2000), 73(2), 113-121
CODEN: BIRTEB; ISSN: 0960-8524
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Xylanase was produced by Aspergillus terreus cultivated on finely ground **wheat** straw in solid-state fermn. The optimal medium compn. was developed by applying the Plackett-Burman exptl. design. Best enzymic activity was obtained in a medium contg. 10 g **wheat** straw/flask moistened with a concd. nutrient salt soln. to 75% initial water content and incubated for 4 days at 30.degree.C. A. terreus xylanase was fractionated by ammonium sulfate pptn. and purified by chromatog. on DEAE Bio-Gel A followed by gel-filtration on Sephadex G-75. The enzyme was characterized by apparent Vmax and Km values of 333.3 U/mg protein and 16.7 mg xylan/mL, resp., obtained for xylanase with **oat** spelt xylan as substrate. The optimal pH and temp. for max. activity were 7 and 50.degree.C, resp. The enzyme showed high specificity towards **oat** spelt xylan and minute activities were obsd. with CM-cellulose and cellobiose. About 48.02% of the activity remained after the enzyme had been incubated at 60.degree.C for 30 min. Metal ions such as Hg2+, Cu2+, Co2+, Fe3+, Pb2+ strongly **inhibited xylanase**, whereas, Ca2+ activated the enzyme.
REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 18 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:116783 HCAPLUS
DOCUMENT NUMBER: 132:150921
TITLE: A novel class of **xylanase inhibitor** proteins
INVENTOR(S): Hessing, Martin; Happe, Randolph Peter
PATENT ASSIGNEE(S): Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek TNO, Neth.
SOURCE: Eur. Pat. Appl., 9 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 979830	A1	20000216	EP 1998-202704	19980812

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,

IE, SI, LT, LV, FI, RO

AB The invention relates to a novel class of **xylanase-inhibiting** proteins, capable of forming a stable complex with endo-xylanases, thereby inactivating the latter. These **xylanase-inhibiting** proteins are obtainable by extn. of **cereals** such as **wheat, corn, barley, triticale, rice, rye, oat,** and legumes such as soybeans. The inhibitors can be applied as stabilizing agents to xylan-degrading enzymes used for industrial processes, e.g for food, feed and non-food applications as paper and pulp technol. Furthermore, the invention relates to strain improvement of industrial xylanase-producing organisms as well as to the selection of **cereals,** in particular **wheat,** in which **xylanase-inhibiting** proteins are absent. Finally the invention relates to quantification and control of **xylanase inhibitors** for assuring effective and controlled dosing of xylanases applied for various industrial processes.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 19 OF 46 HCAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1999:521824 HCAPLUS

DOCUMENT NUMBER: 132:136634

TITLE: Triticum aestivum **Xylanase Inhibitor** (TAXI), a New Class of Enzyme Inhibitor Affecting Breadmaking Performance

AUTHOR(S): Debyser, W.; Peumans, W. J.; Van Damme, E. J. M.; Delcour, J. A.

CORPORATE SOURCE: Laboratory of Food Chemistry, Katholieke Universiteit Leuven, Heverlee, B-3001, Belg.

SOURCE: Journal of Cereal Science (1999), 30(1), 39-43
CODEN: JCSCDA; ISSN: 0733-5210

PUBLISHER: Academic Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB To demonstrate that **cereals** contain protein **inhibitor**(s) of **endoxylanases,** the Triticum aestivum **xylanase-inhibitor** (TAXI) was isolated and characterized. The authors also investigated whether the **endoxylanase inhibitor** identified is active during the breadmaking process. The N-terminus of TAXI had no sequence similarity with any other known protein. TAXI was eluted from the gel filtration column with an apparent Mr of .apprx.40 kDa and migrated upon isoelec. focusing as a single band with a pI of .apprx.8.8. **Wheat** loaves were prepd. without or with A. niger endoxylanase by using a straight dough procedure. The max. increase in bread vol. produced by the A. niger endoxylanase was .apprx.20%. When the same level of endoxylanase activity was added together with purified TAXI, no increase in bread vol. occurred. Upon addn. of TAXI alone, the bread vol. was reduced by 8%. Thus, endogeneous **wheat flour** endoxylanases have a pos. effect on bread vol. and are inhibited by TAXI. Accordingly, breeding TAXI-deficient **wheat** varieties or varieties with low levels of expression of this inhibitor may be important for improving breadmaking performance. (c) 1999 Academic Press.

IT **37278-89-0, Endoxylanase**

RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(purifn. and characterization **endoxylanase inhibitor** from **wheat** and effect on bread vol. of **endoxylanase** and **inhibitor**)
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 20 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:205885 HCAPLUS
DOCUMENT NUMBER: 131:29048
TITLE: A novel class of protein from **wheat** which **inhibits xylanases**
AUTHOR(S): McLauchlan, W. Russell; Garcia-Conesa, Maria T.; Williamson, Gary; Roza, Martinus; Ravestein, Peter; Maat, Jan
CORPORATE SOURCE: Institute of Food Research, Norwich, NR4 7UA, UK
SOURCE: Biochemical Journal (1999), 338(2), 441-446
CODEN: BIJOAK; ISSN: 0264-6021
PUBLISHER: Portland Press Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We have purified a novel class of protein that can inhibit the activity of endo-.beta.-1,4-xylanases. The inhibitor from **wheat** (Triticum aestivum, var. Soisson) is a glycosylated, monomeric, basic protein with a pI of 8.7-8.9, a mol. mass of 29 kDa and a unique N-terminal sequence of AGGKTGQVTVFWGRN. We have shown that the protein can inhibit the activity of two family-11 endo-.beta.-1,4-xylanases, a recombinant enzyme from Aspergillus niger and an enzyme from Trichoderma viride. The inhibitory activity is heat and protease sensitive. The kinetics of the inhibition have been characterized with the A. niger enzyme using sol. **wheat** arabinoxylan as a substrate. The Km for sol. arabinoxylan in the absence of inhibitor is 20.+-.2 mg/mL with a kcat of 103.+-.6 s-1. The kinetics of the inhibition of this reaction are competitive, with a Ki value of 0.35 .mu.M, showing that the inhibitor binds at or close to the active site of free xylanase. This report describes the first isolation of a **xylanase inhibitor** from any organism.
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 21 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:139798 HCAPLUS
DOCUMENT NUMBER: 130:195846
TITLE: Treated **corn** processing waste for improved production of xylanase with Trichoderma
INVENTOR(S): Ringpfeil, Manfred
PATENT ASSIGNEE(S): F. Hoffmann-La Roche AG, Switz.
SOURCE: Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 897977	A2	19990224	EP 1998-115157	19980812
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 5981233	A	19991109	US 1998-130331	19980806
CA 2245173	AA	19990221	CA 1998-2245173	19980818
JP 11113568	A2	19990427	JP 1998-232707	19980819
BR 9803758	A	20000328	BR 1998-3758	19980819
AU 9880858	A1	19990304	AU 1998-80858	19980820
AU 737987	B2	20010906		
CN 1210147	A	19990310	CN 1998-118464	19980820

PRIORITY APPLN. INFO.: EP 1997-114431 A 19970821

AB Xylanase-contg. enzyme complex is prepd. by culturing Trichoderma in medium contg. treated **corn** processing waste. The liq. component of the **corn** processing waste is removed and the remaining solid is autoclaved. This treatment removes **inhibitory** activity and resulted in increased **xylanase** prodn. as well as an increase in the ratio of xylanase activity to other enzyme activities.

L16 ANSWER 22 OF 46 HCAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1998:769224 HCAPLUS
Correction of: 1998:559597

DOCUMENT NUMBER: 129:329963
Correction of: 129:315335

TITLE: Evidence for the presence of a pentosanase inhibitor in **wheat flours**

AUTHOR(S): Rouau, X.; Surget, A.

CORPORATE SOURCE: INRA, Unite de Technologie des Cereales et des Agropolymeres, Montpellier, 34060, Fr.

SOURCE: Journal of Cereal Science (1998), 28(1), 63-70
CODEN: JCSCDA; ISSN: 0733-5210

PUBLISHER: Academic Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The solubilization, by a pentosanase prepn. from Aspergillus niger, of arabinoxylans from water-unextractable pentosans (WUP) isolated from **wheat flour** was much reduced when carried out in **flour** aq. exts. as medium, instead of pure buffer. When **flour** exts. were previously heated at 100.degree.C, the extent of arabinoxylan solubilization was almost restored. The heating at 100.degree.C and centrifugation of the **flour** exts. removed approx. one-third of the sol. protein but very low amts. of arabinoxylan. Increasing the concn. of exts. decreased the extent of WUP arabinoxylan solubilization. There was slight variability between **wheat** cultivars Apollo, Soissons and Thesee in the extent of the inhibitory effect. Compds. responsible for this effect were mainly present in **wheat grain** endosperm but also in bran. Different microbial xylanases from A. niger (Grindamyl S 100 and EI, an endoxylanase purified from this com. prepn.) and Trichoderma strains (C1, a partially purified cellulase/hemicellulase complex, and the com. prepns. Veron HE and Multifect XL) were strongly inhibited. Also the arabinofuranosidase activity present in Grindamyl S 100 was **inhibited** but a lower

extent than **xylanases**. Pronase treatment and protein addn. in the exts. had no effect on the level of inhibition. (c) 1998 Academic Press.

IT **37278-89-0, Xylanase**
RL: BOC (Biological occurrence); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence); PROC (Process)
(**inhibitor**; evidence for the presence of a pentosanase inhibitor in **wheat flours**)

L16 ANSWER 23 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:730548 HCAPLUS
DOCUMENT NUMBER: 130:63747
TITLE: The role of hydrolases and trypsin inhibitor in development of winter **wheat** resistance to Fusarium infection
AUTHOR(S): Klechkovskaya, E. A.; Adamovskaya, V. G.; Wolf, G. A.; Vovchuk, S. V.
CORPORATE SOURCE: Institute of Breeding and Genetics, Academy of Agricultural Sciences of Ukraine, Odessa, 270036, Ukraine
SOURCE: Russian Journal of Plant Physiology (Translation of Fiziologiya Rastenii (Moscow)) (1998), 45(6), 728-735
CODEN: RJPPE2; ISSN: 1021-4437
PUBLISHER: MAIK Nauka/Interperiodica Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Winter **wheat** (Triticum aestivum L.) cultivars differing in their resistance to Fusarium spp. were studied. It was shown that the higher the plant cell susceptibility at the sites of their contacts with a pathogen, the higher their hydrolase activity; the faster these cells lignified and degrading, thus confining the invading fungal hyphae, the more resistant the whole plant became. Plant hydrolases, digesting cellulose and hemicellulose into monosaccharides, provide the energy required for plant resistance against pathogens. In resistant cultivars of winter **wheat**, an elevated fructose level was obsd. at the sites of pathogen invasion. Due to the accumulation of proteinase inhibitor, the resistant plants infested with Fusarium were shown to rapidly neutralize active pathogen proteinases. In this case, the ratio of proteinases to inhibitor was maintained at a level similar to that characteristic of uninfested plants. An increase in the content of trypsin inhibitor and the ratio of proteinases to inhibitor are promising indexes of plant resistance to pathogens.

IT **37278-89-0, Xylanase**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)
(hydrolases and trypsin **inhibitor** in development of winter **wheat** resistance to Fusarium infection)

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 24 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:728536 HCAPLUS
DOCUMENT NUMBER: 130:1779

TITLE: Inhibitors of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications
INVENTOR(S): Debyser, Winok; Delcour, Jan
PATENT ASSIGNEE(S): K.U. Leuven Research & Development, Belg.
SOURCE: PCT Int. Appl., 39 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9849278	A1	19981105	WO 1998-EP2590	19980504
W: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, GW, HU, ID, IL, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9877611	A1	19981124	AU 1998-77611	19980504
EP 996709	A1	20000503	EP 1998-925518	19980504
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
BR 9809348	A	20000704	BR 1998-9348	19980504
JP 2001523104	T2	20011120	JP 1998-546621	19980504

PRIORITY APPLN. INFO.: EP 1997-870060 A 19970430
WO 1998-EP2590 W 19980504

AB The present invention concerns an inhibitor of xylanolytic and/or .beta.-glucanolytic enzymes. Methods are also described for the isolation of the inhibitors. Furthermore, methods for increasing or decreasing the activity of the inhibitor are discussed. Uses of the inhibitors are also described, including applications in the areas of food, feed or beverage technologies. These applications include malting and brewing, improving animal feedstuffs, and baked or extruded **cereal** products.

IT **9025-57-4 37278-89-0, Xylanase**
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); PROC (Process); USES (Uses)
(**inhibitors** of cellulolytic, xylanolytic and .beta.-glucanolytic enzymes and applications)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 25 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:559597 HCAPLUS
DOCUMENT NUMBER: 129:315335
TITLE: Evidence for the presence of a pentosanase inhibitor in **wheat flours**
AUTHOR(S): Tousu, ac.; dauthrl, S.
CORPORATE SOURCE: INRA, Unite de Technologie des Cereales et des Agropolymeres, Montpellier, 34060, Fr.
SOURCE: Journal of Cereal Science (1998), 28(1), 63-70

CODEN: JCSCDA; ISSN: 0733-5210
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The solubilization, by a pentosanase prepn. from Aspergillus niger, of arabinoxylans from water-unextractable pentosans (WUP) isolated from **wheat flour** was much reduced when carried out in **flour** aq. exts. as medium, instead of pure buffer. When **flour** exts. were previously heated at 100.degree.C, the extent of arabinoxylan solubilization was almost restored. The heating at 100.degree.C and centrifugation of the **flour** exts. removed approx. one-third of the sol. protein but very low amts. of arabinoxylan. Increasing the concn. of exts. decreased the extent of WUP arabinoxylan solubilization. There was slight variability between **wheat** cultivars Apollo, Soissons and Thesee in the extent of the inhibitory effect. Compds. responsible for this effect were mainly present in **wheat grain** endosperm but also in bran. Different microbial xylanases from A. niger (Grindamyl S 100 and EI, an endoxylanase purified from this com. prepn.) and Trichoderma strains (C1, a partially purified cellulase/hemicellulase complex, and the com. prepns. Veron HE and Multifect XL) were strongly inhibited. Also the arabinofuranosidase activity present in Grindamyl S 100 was **inhibited** but a lower extent than **xylanases**. Pronase treatment and protein addn. in the exts. had no effect on the level of inhibition. (c) 1998 Academic Press.
IT **37278-89-0, Xylanase**
RL: BOC (Biological occurrence); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence); PROC (Process)
(**inhibitor**; evidence for the presence of a pentosanase inhibitor in **wheat flours**)

L16 ANSWER 26 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:274288 HCAPLUS
DOCUMENT NUMBER: 129:37911
TITLE: Production, partial purification and characterization of xylanase from Trichosporon cutaneum SL409
AUTHOR(S): Liu, Wen; Zhu, Wenmiao; Lu, Yanling; Kong, Jian; Ma, Guirong
CORPORATE SOURCE: The Institute of Microbiology, Shandong University, Jinan, 250100, Peop. Rep. China
SOURCE: Process Biochemistry (Oxford) (1998), 33(3), 331-336
CODEN: PBCHE5; ISSN: 1359-5113
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The effects of different parameters on extracellular xylanase biosynthesis by Trichosporon cutaneum SL409 were studied. Addn. of **wheat** bran and Tween 80 to the medium stimulated enzyme biosynthesis significantly. The highest xylanase activity obtained in liq. culture was 74 IU/mL. The xylanase appeared to be homogeneous after ethanol pptn. and chromatog. on DEAE-cellulose and Sephadex G-75, but it exhibited some microheterogeneity on PAGE. Enzyme activity was optimal at pH 6.5 and 50.degree., and completely inhibited by Hg2+. Cu2+, Fe2+, Zn2+ and Mn2+

also showed significant inhibitory effects. No inhibition was obsd. with Mg2+, Ca2+ and EDTA at 1 mM.

L16 ANSWER 27 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1997:713005 HCAPLUS
DOCUMENT NUMBER: 128:22088
TITLE: Arabinoxylan solubilization and inhibition of the **barley** malt xylanolytic system by **wheat** during mashing with **wheat** wholemeal adjunct: evidence for a new class of enzyme inhibitors in **wheat**
AUTHOR(S): Debyser, Winok; Derdelinckx, Guy; Delcour, Jan A.
CORPORATE SOURCE: Lab. Food Chemistry, Katholieke Univ. Leuven, B-3001, Belg.
SOURCE: Journal of the American Society of Brewing Chemists (1997), 55(4), 153-156
CODEN: JSBCD3; ISSN: 0361-0470
PUBLISHER: American Society of Brewing Chemists, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Three EBC worts were made with 100% **barley** malt and eight with 60% **barley** malt and 40% **wheat**, of which two had addns. of a Bacillus subtilis endoxylanase. The xylose (Xyl) levels of centrifuged wort (indicative of arabinoxylan levels) made from 100% **barley** malt were 0.46, 0.70, and 0.55% (% dry matter), while the corresponding malt water-extd. Xyl content were 0.31, 0.44, and 0.41%. The Xyl levels in centrifuged worts from 60% **barley** malt and 40% **wheat** (0.37-0.58%) depended mainly on the water-extractable arabinoxylan content of the starting material. The endoxylanolytic levels of the malts had only minor effect on the resulting Xyl contents of the worts. The increase of Xyl levels during mashing with 40% **wheat** (0.05-0.10%) were 12-58% lower than 60% of the increase in Xyl with a corresponding 100% malt wort. The addn. of the endoxylanase from B. subtilis increased the centrifuged wort Xyl level. Expts. in which the endoxylanolytic activity of malt exts. was measured in the presence of **wheat** water-extractable provided evidence for the presence of one or more **endoxylanase inhibitors** in **wheat** that are inactivated by heat treatment. The **wheat** inhibitors however did not inactivate the B. subtilis endoxylanase.

L16 ANSWER 28 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1996:519598 HCAPLUS
DOCUMENT NUMBER: 125:161831
TITLE: Synergic effects among endo-xylanase, .beta.-xylosidase, and .alpha.-L-arabinofuranosidase from Bacillus stearothermophilus
AUTHOR(S): Suh, Jung-Han; Cho, Ssang-Goo; Choi, Yong-Jin
CORPORATE SOURCE: College Natural Resources, Korea University, Seoul, 136-701, S. Korea
SOURCE: J. Microbiol. Biotechnol. (1996), 6(3), 179-183
CODEN: JOMBES; ISSN: 1017-7825
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Synergism among endo-xylanase, .beta.-xylosidase, and .alpha.-L-

arabinofuranosidase from Bacillus stearothermophilus upon xylan hydrolysis was investigated by using birchwood, **oat** spelt, and arabinoxylan as substrates. Endo-xylanase and .beta.-xylosidase showed the cooperative action on all three substrates tested, revealing the fact that .beta.-xylosidase assists endo-xylanase action in xylan hydrolysis by relieving the end-product **inhibition** upon endo-**xylanase** conferred by xylooligomers. .alpha.-L-Arabinofuranosidase also exhibited synergic effects with endo-xylanase and .beta.-xylosidase on **oat** spelt and arabinoxylan, which contained significant amts. of arabinose side chains, whereas no synergism was detected on birchwood xylan which had only trace amts. of the side chain. Thus, the hydrolysis of xylan contg. arabinose side chains required .alpha.-L-arabinofuranosidase as well as endo-xylanase and .beta.-xylosidase for the better hydrolysis of the substrates, and these enzymes work cooperatively to maximize the extent and rate of xylan hydrolysis.

L16 ANSWER 29 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1996:519597 HCAPLUS
DOCUMENT NUMBER: 125:189146
TITLE: Synergism among endo-xylanase, .beta.-xylosidase, and acetyl xylan esterase from Bacillus stearothermophilus
AUTHOR(S): Suh, Jung-Han; Choi, Yong-Jin
CORPORATE SOURCE: College Natural Resources, Korea University, Seoul, 136-701, S. Korea
SOURCE: J. Microbiol. Biotechnol. (1996), 6(3), 173-178
CODEN: JOMBES; ISSN: 1017-7825
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Synergic effects among endo-xylanase, .beta.-xylosidase, and acetyl xylan esterase of Bacillus stearothermophilus in the hydrolysis of xylan were studied by using birchwood, **oat** spelt, and acetylated xylan as substrates. Synergism between endo-xylanase and .beta.-xylosidase was obsd. on all three substrates tested, indicating that .beta.-xylosidase enhanced the prodn. of xylose by relieving the end-product **inhibition** upon endo-**xylanase** conferred by xylooligomers. Endo-xylanase and .beta.-xylosidase also showed synergism with acetyl xylan esterase in the hydrolysis of birchwood and acetylated xylan, while no synergic effect was detected in **oat** spelt xylan hydrolysis. Thus, the hydrolysis of xylan contg. acetic acid side chains required the action of acetyl xylan esterase, which eliminated the steric hindrance of the side chains, leading to the better hydrolysis by endo-xylanase and .beta.-xylosidase and the acetyl xylan esterase activity was also enhanced by endo-xylanase, and .beta.-xylosidase for the latter enzymes provided acetyl xylan esterase with shorter xylan oligomers, the better substrate for the enzyme.

L16 ANSWER 30 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:201777 HCAPLUS
DOCUMENT NUMBER: 122:127147
TITLE: Production and characterization of xylanase from a Streptomyces species grown on agricultural wastes
AUTHOR(S): Patel, B. N.; Ray, R. M.
CORPORATE SOURCE: Department Biosciences, Sardar Patel University, Vallabh Vidyanagar, 388120, India

SOURCE: World J. Microbiol. Biotechnol. (1994), 10(5), 599
CODEN: WJMBEY; ISSN: 0959-3993
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Alkali-treated **corn** stalk gave max. xylanase prodn. at supporting growth of Streptomyces HM-15. Xylanase was stable for 24 h over a pH range of 5.0 to 7.0, had optimal activity between 50 and 60.degree. and a half life of 5 h at 60.degree.. **Xylanase** prodn. and activity were **inhibited** by xylose.

L16 ANSWER 31 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:38024 HCAPLUS
DOCUMENT NUMBER: 122:127104
TITLE: Purification, characterization and chemical modification of the xylanase from alkali-tolerant Bacillus sp. YA-14
AUTHOR(S): Park, Young-Seo; Yum, Do-Young; Hahm, Byoung-Kwon; Bai, Dong-Hoon; Yu, Ju-Hyun
CORPORATE SOURCE: College Engineering, Yonsei University, Seoul, 120-749, S. Korea
SOURCE: J. Microbiol. Biotechnol. (1994), 4(1), 41-8
CODEN: JOMBES; ISSN: 1017-7825
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The xylanase from alkali-tolerant Bacillus sp. YA-14 was purified to homogeneity by CM-cellulose, Sephadex G-50, and hydroxyapatite column chromatogs. The mol. wt. of the purified enzyme was estd. to be 20,000 Da by SDS-PAGE. The purified enzyme slightly hydrolyzed CM-cellulose and Avicel, but did not hydrolyze sol. starch, dextran, pullulan, and .rho.-nitrophenyl-.beta.-D-xylopyranoside. The max. degree of hydrolysis by enzyme for birchwood xylan and **oat** spelts xylan were 47 and 40%, resp. The Michaelis consts. for birchwood xylan and **oat** spelts xylan were calcd. to be 3.03 mg/mL and 5.0 mg/mL resp. The activity of the **xylanase** was **inhibited** reversibly by HgCl2, and showed competitive inhibition by N-bromosuccinimide, which probably indicates the involvement of tryptophan residue in the active center of the enzyme. The xylanase was identified to be xylose-producing endo-type xylanase and did not show the enzymic activities which cleave the branch point of the xylan structure.

L16 ANSWER 32 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:211220 HCAPLUS
DOCUMENT NUMBER: 120:211220
TITLE: Purification and characterization of a thermophilic xylanase from the brown-rot fungus Gloeophyllum trabeum
AUTHOR(S): Ritschkoff, Anne Christine; Buchert, Johanna; Viikari, Liisa
CORPORATE SOURCE: For. Prod. Lab., VTT, Espoo, 02151, Finland
SOURCE: J. Biotechnol. (1994), 32(1), 67-74
CODEN: JBITD4; ISSN: 0168-1656
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A xylanase produced by the brown-rot fungus, Gloeophyllum trabeum, was

purified to electrophoretic homogeneity by ion-exchange chromatog. and gel filtration. The enzyme had an isoelec. point of 5.0 and mol. mass of 39-42 kDa, resp. The xylanase appeared to prefer the most substituted glucurono-xylan (DMSO-xylan) as substrate and exhibited a pH optimum of 4.0 and a temp. optimum of 80 .degree.C after 30 min incubation. Approx. 22% of the activity remained after 2 h incubation at 70.degree.C and the half-life of xylanase at 60.degree.C was 24 h. The xylanase also showed .beta.-glucanase activity with **barley** .beta.-glucan as substrate as side activity. The xylanase of G. trabeum was very tolerant to inhibitors. Among the various inhibitors studied, only 10 mM AlCl3 was found to **inhibit** the **xylanase** activity.

L16 ANSWER 33 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:26023 HCAPLUS
DOCUMENT NUMBER: 120:26023
TITLE: Partial purification and properties of hemicellulases from **wheat** bran "Koji"
AUTHOR(S): Kimura, Isao
CORPORATE SOURCE: Food Res. Inst. Kagawa Prefect. Gov., Takamatsu, 761, Japan
SOURCE: Kenkyu Hokoku - Kagawa-ken Shokuhin Shikenjo/Kagawa-ken Hakko Shokuhin Shikenjo (1992), Volume Date 1991, 84, 1-5
CODEN: KKHHE4
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB Hemicellulases were purified from **wheat**-bran "Koji" and their properties were investigated. The crude enzyme from "Koji" showed high xylanase and galactanase activities. Xylanase and xylosidase fractions were obtained from the crude enzyme by Sephadex G-100 column chromatog. The **xylanase** activity was **inhibited** by 12% NaCl (wt/vol.), but the xylosidase activity was not. The xylanase fraction was applied on SP=Toyopearl 650M column chromatog. to sep. xylanase IV. Unadsorbed fractions were further purified by DEAE-Toyopearl 650M column chromatog. to sep. xylanase II and III. The partially purified xylanase fractions (I, II, III) showed a distinct hydrolytic pattern of xylan.

L16 ANSWER 34 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1993:645065 HCAPLUS
DOCUMENT NUMBER: 119:245065
TITLE: Xylanase production by Bacillus polymyxa
AUTHOR(S): Pinaga, F.; Pena, J. L.; Valles, S.
CORPORATE SOURCE: Inst. Agroquim. Technol. Aliment., CSIC, Valenica, 46010, Spain
SOURCE: J. Chem. Technol. Biotechnol. (1993), 57(4), 327-33
CODEN: JCTBED; ISSN: 0268-2575
DOCUMENT TYPE: Journal
LANGUAGE: English
AB B. polymyxa produced high levels (12-13 U cm-3) of extracellular xylanases when grown in a complex medium contg. yeast ext. and **oat** spelt xylan as nitrogen and carbon sources resp. Substantially lower yields of enzyme were produced during growth on the monosaccharides glucose, arabinose and xylose. Meager growth occurred when ammonium sulfate, instead of yeast ext., was used as nitrogen source. When assayed in

culture broth supernatants, xylanase showed an optimum activity in 48.degree. and at pH values in the range 5.cntdot.0-6.cntdot.5. Under such conditions, the half-life of this xylanase prepn. was 8 h. Mn2+ showed a strong inhibitory effect on the enzyme, but inhibition by EDTA (27% wt./vol.) suggested that up to five sep. xylanases in the range of 20 to 116 kDa were produced.

L16 ANSWER 35 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1993:163839 HCAPLUS
DOCUMENT NUMBER: 118:163839
TITLE: Xylan-degrading enzymes produced by the thermophilic actinomycete Thermomonospora fusca
AUTHOR(S): McCarthy, A. J.; Bachmann, S. L.
CORPORATE SOURCE: Dep. Genet. Microbiol., Univ. Liverpool, Liverpool, L69 3BX, UK
SOURCE: Prog. Biotechnol. (1992), 7(Xylans Xylanases), 309-13
CODEN: PBITE3; ISSN: 0921-0423
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The thermophilic actinomycete T. fusca produces an inducible xylan-degrading enzyme system, the major components of which are multiple endoxylanases. Their purifn. and properties are described along with those of the single cell-assocd. .beta.-xylosidase, single extracellular .alpha.-arabinofuranosidase and multiple acetyl esterases. The endoxylanase and .beta.-xylosidase activities exhibited relatively good thermostability properties, and the latter enhanced the saccharification of xylan by relieving end-product **inhibition** on **endoxylanase**. Purified .alpha.-arabinofuranosidase and endoxylanase cooperated in the saccharification of **wheat** straw but did not interact to enhance the degrdn. of a com. xylan prepn. All of the purified enzymes were very specific, and there was no cross-reaction between endoxylanases and endoglucanases. Both the intracellular and extracellular acetyl esterases released acetic acid from acetyl xylan.

L16 ANSWER 36 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1993:75892 HCAPLUS
DOCUMENT NUMBER: 118:75892
TITLE: Purification and general properties of xylanase from Aspergillus terreus
AUTHOR(S): Ghareib, Mohamed; Nour El Dein, Mahmoud M.
CORPORATE SOURCE: Fac. Educ., Ain Shams Univ., Cairo, Egypt
SOURCE: Zentralbl. Mikrobiol. (1992), 147(8), 569-76
CODEN: ZEMIDI; ISSN: 0232-4393
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A. terreus THOM produced appreciable amts. of xylanase on medium contg. acid-pretreated **rice** straw as sole C source. The enzyme was purified about 25-fold by ammoniums sulfate pptn., gel filtration through Sephadex G-50 and ion-exchange chromatog. on DEAE-cellulose with a yield of about 23% and specific activity of 15.38 units/mg protein. Optimum activity against xylan was at 45.degree. and pH 4.5. Relative stability of the enzyme was recorded at pH 4-5.5. Heating the enzyme prepn. for 1 h at 60.degree. resulted in 82.61% loss of activity. After exposure to 90.degree. for 10 min, the xylanase retained 4.28% of its original

activity. Purified enzyme lost 25% of the original activity after storage at 4.ANG. for 9 monthes in 0.05M acetate buffer (pH 4.5). The Km value of the enzyme was 0.83 mM. Zn2+ was the most enhancing agent for xylanase; Cu2+, followed by Co2+ and K+, were the most inhibitory cations. The **xylanase** was strongly **inhibited** by HgCl2, 2,4-dinitrophenol, phloridzin, and EDTA.

L16 ANSWER 37 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1993:34886 HCAPLUS
DOCUMENT NUMBER: 118:34886
TITLE: Purification, characterization and partial amino acid sequences of a xylanase produced by Penicillium chrysogenum
AUTHOR(S): Haas, Hubertus; Herfurth, Elke; Stoeffler, Georg; Redl, Bernhard
CORPORATE SOURCE: Inst. Mikrobiol., Univ. Innsbruck, Innsbruck, A-6020, Austria
SOURCE: Biochim. Biophys. Acta (1992), 1117(3), 279-86
CODEN: BBACAQ; ISSN: 0006-3002
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An extracellular xylanase (1,4-.beta.-D-xylan xylanohydrolase, EC 3.2.1.8, endo 1,4-.beta.-xylanase) was found to be the major protein in the culture filtrate of P. chrysogenum when grown on 1% xylan. In contrast to other microorganism no xylanase multiplicity was found in P. chrysogenum under the conditions used. This enzyme was purified to homogeneity by high performance anion-exchange and size-exclusion chromatog. It had an Mr of 35,000 as estd. by SDS-PAGE and was shown to be active as a monomer. No glycosylation of the protein could be detected neither by a sensitive glycostain nor by enzymic deglycosylation studies. The enzyme hydrolyzed **oat** spelt and birchwood xylan randomly, yielding xylose and xylobiose as major end products. It had no cellulase, CMCase, .beta.-xylosidase or arabinogalactanase activity but acted on p-nitrophenylcellobioside. The pH and temp. optima for its activity were pH 6.0 and 40.degree., resp. Eight peptides obtained after endoproteinase LysC digestion of xylanase have been sequenced, six of them showed considerable amino acid similarity to glucanases and high Mr/acidic xylanases from different bacteria, yeasts and fungi.

L16 ANSWER 38 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1992:566400 HCAPLUS
DOCUMENT NUMBER: 117:166400
TITLE: Preliminary studies on a xylanase from an Arthrographis species
AUTHOR(S): Okeke, Benedict C.; Obi, Samuel K. C.
CORPORATE SOURCE: Dep. Microbiol., Univ. Nigeria, Nsukka, Nigeria
SOURCE: FEMS Microbiol. Lett. (1992), 96(1), 43-7
CODEN: FMLED7; ISSN: 0378-1097
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An Arthrographis sp. strain F4 xylanase was purified by acetone fractionation, ion-exchange on DEAE-Sephadex A-50 and Sephadex G-200 gel-filtration techniques. Its relative mol. mass (Mr) was estd. to be 28,100. The xylanase was optimaly active at 55.degree., pH 5.5, and

stable at 40.degree. and pH 5.0-6.0. Significant inhibition ($P < 0.05$) of the enzyme was obsd. with Mn2+, Hg2+, Cu2+ or Ag+, but not with Ba2+, Ca2+, or Co2+ ($P > 0.05$). The Km value for **oat** spelts xylan was 7.7 mg mL-1.

L16 ANSWER 39 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:626701 HCAPLUS
DOCUMENT NUMBER: 115:226701
TITLE: Functional characteristics of xylanases from Penicillium corylophilum D15
AUTHOR(S): Yang, Ruipeng; Hu, Weiwang; Zhao, Xuehui
CORPORATE SOURCE: Cent. China Agric. Univ., Wuhan, 430070, Peop. Rep. China
SOURCE: Tianran Chanwu Yanjiu Yu Kaifa (1991), 3(2), 7-10
CODEN: TCYKE5; ISSN: 1001-6880
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
AB Functional characteristics of xylanases (Dx1, Dx2, Dx3, and Dx4) from P. corylophilum D15 were investigated. The optional pH of Dx1 and Dx4 was 4.8; the optimal temps. of Dx1 and Dx4 were 40 and 50.degree.; resp. The optimal pH and temp values of Dx2 and Dx3 were 4.2 and 50.degree., resp. Ag+, Hg2+, and Cu2+ strongly **inhibited** all 4 **xylanases** and SDS also **inhibited** those **xylanases**. Mg2+ activated Dx1. By using **oat** spelt xylan as a substrate, Km values of Dx1 and Dx2 were 11.7 and 8.3 mg/mL, resp. By using Kenaf stalk xylan as a substrate, the Km of Dx2 was 8.4 mg/mL. By using larchwood xylan as substrate, the Km of Dx3 was 6.3 mg/mL. The hydrolysis products of **oat** spelt xylan with Dx1 were mainly xylose but also some xylooligosaccharides. The hydrolysis products of Dx2, Dx3, and Dx4 were mainly xylooligosaccharides, but also some xylose.

L16 ANSWER 40 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:553647 HCAPLUS
DOCUMENT NUMBER: 115:153647
TITLE: Purification and characterization of an endoxylanase from Trichoderma koningii G-39
AUTHOR(S): Huang, Lina; Hseu, Tzong Hsiung; Wey, Ta Tung
CORPORATE SOURCE: Inst. Life Sci., Natl. Tsing Hua Univ., Hsinchu, Taiwan
SOURCE: Biochem. J. (1991), 278(2), 329-33
CODEN: BIJOAK; ISSN: 0306-3275
DOCUMENT TYPE: Journal
LANGUAGE: English
AB T. koningii G-39 produced xylanases in submerged culture using **oat** spelt xylan or cryst. cellulose, Avicel, as the sole C source. A low-mol.-wt. endoxylanase (EC 3.2.1.8) was purified from the culture filtrate by ion-exchange chromatog. on SP-Trisacryl-M and gel filtration on Fractogel TSK HW-50F. It was homogeneous on SDS-PAGE and isoelec. focusing. A typical procedure provided .apprx.11-fold purifn. with 4.5% protein yield and 50% activity recovery. The purified enzyme has a mol. wt. of .apprx.21,500 and a pI of 8.9. Its specific activity was 6100 units/mg protein, with optimal activity toward 0.5% xylan at about pH 5.5 and 60.degree.. The purified enzyme had no activity against CM-cellulose with a degree of substitution of 0.63. It also showed no

.beta.-xylosidase activity. The Km and Vmax values, as detd. with the sol. fraction of **oat** spelt xylan as substrate, were 0.70 mg/mL and 1.85 .times. 106 .mu.mol/min/mg enzyme, resp. Hg2+ (1 mM) and SDS (10 mM) completely **inhibited xylanase** activity, whereas Ca2+ showed no significant effect on the enzyme activity at 1 mM, but gave 80% inhibition at 10 mM. The enzyme contained .apprx.4.4% carbohydrate and showed an immunochem. relation to a cellobiohydrolase from the same fungal strain.

L16 ANSWER 41 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:530464 HCAPLUS
DOCUMENT NUMBER: 115:130464
TITLE: Purification and cooperative activity of enzymes constituting the xylan-degrading system of Thermomonospora fusca
AUTHOR(S): Bachmann, Susan L.; McCarthy, Alan J.
CORPORATE SOURCE: Dep. Genet. Microbiol., Univ. Liverpool, Liverpool, L69 3BX, UK
SOURCE: Appl. Environ. Microbiol. (1991), 57(8), 2121-30
CODEN: AEMIDF; ISSN: 0099-2240
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The thermophilic actinomycete, T. fusca, produced endoxylanase, .alpha.-arabinofuranosidase, .beta.-xylosidase, and acetyl esterase activities maximally during growth on xylan. Growth yields on glucose, xylose, or arabinose were comparable, but prodn. of endoxylanase and .beta.-xylosidase was not induced on these substrates. The crude xylanase activity was thermostable and relatively resistant to end-product inhibition by xylobiose and xylan hydrolysis products. Six proteins with xylanase activity were identified by zymogram anal. of isoelec. focusing gels, but only a 23-kDa protein exhibiting 3 isomeric forms could be purified by fast-protein liq. chromatog. Endoglucanases were also identified in CM-cellulose-grown cultures, and their distinction from endoxylanases was confirmed. .alpha.-Arabinofuranosidase activity was due to a single dimeric protein of 92 kDa, which was particularly resistant to end-product inhibition by arabinose. Three bands of acetyl esterase activity were detected by zymogram anal., and there was evidence that these mainly consisted of an intracellular 80-kDa protein secreted to yield active 40-kDa subunits in the culture supernatant. The acetyl esterases were found to be responsible for acetyl xylan esterase activity in T. fusca, in contrast to the distinction proposed in some other systems. The addn. of purified .beta.-xylosidase to endoxylanase increased the hydrolysis of xylan, probably by relieving end-product inhibition. The enhanced saccharification of **wheat** straw caused by the addn. of purified .alpha.-arabinofuranosidase to T. fusca endoxylanase suggested a truly synergistic relation, in agreement with proposals that arabinose side-groups on the xylan chain participate in crosslinking within the plant cell wall structure.

L16 ANSWER 42 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:403729 HCAPLUS
DOCUMENT NUMBER: 115:3729
TITLE: Partial purification and properties of an endo-xylanase from cucumber seeds

AUTHOR(S): Mujer, Cesar V.; Kretchman, Dale W.; Miller, A. Raymond
CORPORATE SOURCE: Dep. Bot., Univ. Maryland, College Park, MD, 20742, USA
SOURCE: Physiol. Plant. (1991), 81(3), 327-34
CODEN: PHPLAI; ISSN: 0031-9317
DOCUMENT TYPE: Journal
LANGUAGE: English

AB An endo-xylanase, 1,4-.beta.-D-xylan xylanohydrolase (EC 3.2.1.8) from immature cucumber (Cucumis sativus L. cv. Heinz 3534) seeds, was partially purified using ammonium sulfate fractionation and chromatog. on SP-Sephadex and Sephadex G-100 in order to det. its role in xylan metab. during development. Attempts to further purify the enzyme using chromatog. on DEAE-Sephadex, Bio-Gel HTP hydroxylapatite. Sephadex G-200 and Con A-Sepharose 4B and native polyacrylamide gel electrophoresis resulted in a significant decrease or complete loss of enzyme activity. Endo-xylanase had a native mol. wt. of 96 kDa as detd. by gel filtration, exhibited optimal activity at pH 5.0 and 48.degree., and was most stable from pH 4.0 to 5.0. Using beechwood 4-o-methyl-D-glucurono-D-xylan dyed with Remazol Brilliant Blue R as substrate, the Km was estd. to be 0.70 mg mL-1. HgCl2 at 1 mM **inhibited** endo-**xylanase** completely. Other metal ions inhibited the enzyme in the order Cu2+ > Fe3+ > Zn2+ > Ca2+ > Mn2+. The ethanol-sol. products of endo-xylanase action on beechwood xylan were isolated and characterized by consecutive chromatog. on Bio-Gel P-10 and P-2. The major reaction products were xylo-oligosaccharides [d.p. (dp) > 10] but traces of xylobiose and free xylose were also isolated. The formation of xylo-oligosaccharides indicated that the reaction was catalyzed primarily by an endo-xylanase. The partially pure enzyme had no activity towards other cell wall polysaccharides such as cellulose, CM-cellulose, sodium carboxyl cellulose, potato starch, orange pectin, polygalacturonic acid, arabinogalactan and .beta.-glucan. However, it was able to hydrolyze larchwood and **oat** spelts xylan and a polysaccharide component from purified cucumber cell walls. The ability to utilize a substrate from cucumber cell walls supports the hypothesis that endo-xylanase is involved in the development of cucumber seeds.

L16 ANSWER 43 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1990:137446 HCAPLUS
DOCUMENT NUMBER: 112:137446
TITLE: Influence of sugars on endoglucanase and .beta.-xylanase activities of a Bacillus strain
AUTHOR(S): Paul, Jaishree; Varma, A. K.
CORPORATE SOURCE: Sch. Life Sci., Jawaharlal Nehru Univ., New Delhi, 110 067, India
SOURCE: Biotechnol. Lett. (1990), 12(1), 61-4
CODEN: BILED3; ISSN: 0141-5492
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A Bacillus sp. screened from termite infested soils produced significant amts. of endoglucanase and xylanase when grown on a lignocellulosic substrate, **rice** hulls. Biosynthesis of these enzymes was significantly enhanced by the addn. of 0.2% cellobiose or glucose for endoglucanase and xylose for .beta.-xylanase activities. In the actual

hydrolysis, glucose and cellobiose at low concns. acted as activators of endoglucanase activity whereas cellobiose and xylose acted as **inhibitors** of .beta.-**xylanase** activity.

L16 ANSWER 44 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1984:625520 HCAPLUS
DOCUMENT NUMBER: 101:225520
TITLE: Purification and properties of endo-1,4-.beta.-xylanase from Humicola lanuginosa
AUTHOR(S): Kitpreechavanich, Vichien; Hayashi, Mitsunori; Nagai, Shiro
CORPORATE SOURCE: Fac. Eng., Hiroshima Univ., Higashi-Hiroshima, 724, Japan
SOURCE: J. Ferment. Technol. (1984), 62(5), 415-20
CODEN: JFTED8; ISSN: 0385-6380
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Endo-1,4-.beta.-xylanase (I) (EC 3.2.1.8) was extd. from a **wheat** bran culture of H. lanuginosa. I was purified 54-fold with 68% yield by gel filtration and ion-exchange chromatog. Purified I had a mol. wt. of .apprx.21,000 with an pI of 4.1. The optimum pH was 6.0 and the temp. was 65.degree.. The xylan hydrolysis by I, xylooligosaccharides were obsd. initially, and after prolonged incubation, xylotriose and xylobiose were predominant, with a small amt. of xylose. Apparently, I is an endoxylanhydrolase. However, when xylobiose was used as a substrate, a trace of xylose was obsd. The apparent Km was 7.3 mg/mL, and xylobiose was shown to be a competitive inhibitor to I with a Ki of 1.4 mg/mL.

L16 ANSWER 45 OF 46 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1982:595847 HCAPLUS
DOCUMENT NUMBER: 97:195847
TITLE: Ethylene effects on amylase activity from isolated **barley** aleurone layers. Possible modification by proteolytic enzymes
AUTHOR(S): Eastwell, Kenneth C.; Spencer, Mary S.
CORPORATE SOURCE: Dep. Plant Sci., Univ. Alberta, Edmonton, AB, T6G 2P5, Can.
SOURCE: Plant Physiol. (1982), 70(3), 849-52
CODEN: PLPHAY; ISSN: 0032-0889
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The effect of protease inhibitors on the response of gibberellic acid-treated **barley** aleurone layers to ethylene was examd. In the absence of protease inhibitors, ethylene plus gibberellic acid initially increased the prodn. of amylase activity relative to layers incubated with gibberellic acid alone. Exposure to ethylene plus gibberellic acid for .gtoreq.48 h however, led to depressed levels of amylase activity compared to samples incubated with gibberellic acid in hydrocarbon-free air. The direct assay of proteolytic activity revealed a small increase in activity in response to ethylene. The significance of this response was probed further by including inhibitors of **barley** proteases in the incubation medium. When KBrO3 was introduced, ethylene did not cause any alteration in amylase activity compared to samples incubated in hydrocarbon-free air. However, in the presence of

N-ethylmaleimide, ethylene treatment induced a 52% increase in amylase activity recovered from samples after 48 h. These results suggest that proteases contribute to the loss of amylase activity in response to ethylene and thus alter the apparent effect of ethylene on amylase synthesis. The effect of protease inhibitors on other hydrolases is also discussed. During the incubation period, the pH of the medium declined significantly. However, ethylene had no effect on the extent of this decline.

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(of isolated **barley** aleurone, proteinase **inhibitors** effect on)